

## **DISPLAY SYSTEM**

### **FIELD OF THE INVENTION**

5 The invention relates to display products, and more particularly to display systems that can be mounted on a wall or other mounting surface.

### **BACKGROUND OF THE INVENTION**

10 Display systems including display boards are useful to display a variety of information, such as business information, advertising information, and educational information. Some systems are portable in that the display board can be easily removed from a mounting surface, allowing the display board to be removed from one position and reattached at another position. However, these systems can be unstable.

### **SUMMARY OF THE INVENTION**

15 The present invention provides a display system for use in any number of different applications. More specifically, the invention provides a display system including a rail. The rail has a mounting portion and a first hook portion. The first hook portion defines an axis that is angled relative to the mounting portion.

20 The display system also includes at least one display board removably coupled to the rail. The display board has a board hook portion that is removably coupled to the first hook portion along the axis such that the display board is also angled relative to the mounting portion.

25 In one embodiment, the angle relative to the mounting portion causes at least a portion of the display board to flex away from the mounting portion when the display board is coupled to the rail. In another embodiment, the rail includes a

second hook portion and at least one accessory item coupled to the second hook portion. In another embodiment, the first hook portion has a width and the board hook portion has a gap width approximately equal to the width of the first hook portion. In another embodiment, the angle of the axis relative to the mounting portion is about 15°.

The invention also provides a portable display board configured to be removably coupled to a mounting surface. The portable display board includes a top edge, a bottom edge, and a board hook portion coupled to the display board. The display board is configured to cooperate with the mounting surface such that when the display board is removably coupled to the mounting surface, at least a portion of the display board engages the mounting surface to securely couple the display board to the mounting surface.

The invention also defines a method of mounting a portable display board to a mounting surface. The method includes coupling a rail to the mounting surface, the rail including a first hook portion defining an axis, providing at least one display board having a board hook portion, and moving the board hook portion into position with the rail, thereby removably coupling the board hook portion to the rail along the axis.

Other features and advantages of the invention will become apparent to those skilled in the art upon review of the following detailed description, claims, and drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a display system embodying aspects of the present invention.

Fig. 2 is a front view of a display board for use in the display system of Fig. 1.

Fig. 3 is a section view taken along line 3-3 of Fig. 2.

5 Fig. 4 is a side view of a rail for mounting the display board of Fig. 2.

Fig. 5 is a side view of the display board of Fig. 2 mounted to the rail of Fig. 4.

Fig. 6 is a perspective view of a flip chart holder to be used with the display system of Fig. 1.

10 Fig. 7 is a side view of the flip chart holder of Fig. 6 engaging a pad of paper.

Fig. 8 is a section view taken along line 8-8 of Fig. 7 with the pad of paper removed.

15 Fig. 9 is an exploded perspective view of a marker caddy for use with the display system of Fig. 1.

Fig. 10 is a perspective view of an alternative rail of the display system of the present invention.

Fig. 11 is an exploded view of the alternative rail of Fig. 10.

20 Before one embodiment of the invention is explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is understood that the phraseology and terminology used herein is for the purpose  
25 of description and should not be regarded as limiting. The use of "including,"

“having,” and “comprising” and variations thereof herein is meant to encompass the items listed thereafter and equivalents thereof as well as additional items.

#### DETAILED DESCRIPTION

5            Fig. 1 illustrates a display system 14 according to the invention. The display system 14 includes a rail 30 that is designed to support a variety of different portable display boards. In the illustrated embodiment, the rail 30 supports a white board assembly 18, a chalk board assembly 22, and a peg board assembly 26. In addition to these surfaces, the present invention could include a  
10       magnetic surface, cork, or any other suitable display material or combination of materials.

             The rail 30 extends along a desired length of a wall 48. It is understood that while the rail 30 of the illustrated embodiment is a continuous rail extending along the wall 48, the rail 30 can instead include a plurality of spaced apart rail  
15       segments and still fall within the scope of the present invention. Other features of the rail 30 will be described in more detail below with respect to Fig. 4.

             Figs. 2 and 3 illustrate the portable white board assembly 18 for use in the display system 14 in more detail. In the illustrated embodiment, the white board assembly 18 includes a white board 32 having a dry erase surface 34 that allows  
20       for easy addition and removal of information using a suitable dry erase marker. The white board assembly 18 further includes a frame 50 surrounding at least a portion of the edges of the white board 32. The frame 50 includes corner portions 54 that protect the corners of the white board 32 and a side molding 58 coupled to the bottom and sides of the white board 32. The side molding 58 has a rounded

exterior and includes an inner protrusion 70 that interacts with a corresponding cavity 74 in the board 32 to secure the side molding 58 to the board 32.

The frame 50 further includes a top molding 78 coupled to the top of the board 32. The top molding 78 includes an inner protrusion 86 that interacts with a corresponding cavity 90 in the top of the board 32 to secure the top molding 78 to the board 32. The top molding 78 further includes an outer protrusion 92 that can flex to accommodate variations in the width of the rail 30 when the white board assembly 18 is coupled to the rail 30. The top molding 78 further includes a board hook portion 94 that defines a gap having a width  $W_1$  that is designed to couple the board assembly 18 to the rail 30.

With reference to Fig. 4, the rail 30 is designed to be coupled to a mounting surface, such as the wall 48. The rail 30 includes a mounting portion 102, a first hook portion 106, and a second hook portion 110 capable of receiving an accessory. The mounting portion 102 includes an aperture 114 through which a fastener 116 can be inserted to couple the rail 30 to the wall 48. The fastener could be a screw, a nail, a bolt, a rivet, glue, mating layers of hook and loop material, or any other appropriate fastener.

The first hook portion 106 has a width  $W_2$  that is approximately equal to or slightly larger than the gap width  $W_1$  of the board hook portion 94. The first hook portion 106 defines an axis 118 that is angled relative to the mounting portion 102. In the illustrated embodiment, the axis 118 is angled approximately  $15^\circ$  relative to the mounting portion 102. However, it is understood that the axis 118 could be any appropriate angle, such as greater than about  $5^\circ$  and less than about  $45^\circ$ , and preferably greater than about  $10^\circ$  and less than about  $25^\circ$ . The chosen angle will depend on the height  $H$  of the white board 32 and the flexibility of the

board. For example, a white board 32 having greater flexibility could be mounted at a steeper angle than a board with less flexibility.

Fig. 5 illustrates the white board assembly 18 coupled to the rail 30.

Coupling the white board assembly 18 to the rail 30 angles the white board  
5 assembly 18 with respect to the mounting portion 102 of the rail 30, causing a  
portion of the white board assembly 18 (near the bottom edge 62) to engage and  
press against the wall 48. This pressure engagement causes the assembly 18 to  
flex away from the mounting portion 102 of the rail 30. It is understood that,  
while the white board assembly 18 contacts the wall 48 near the bottom edge 62  
10 of the board assembly 18 in the illustrated embodiment, any portion of the white  
board assembly 18 can contact the wall and still fall within the scope of the  
present invention.

The pressure engagement of the white board assembly 18 to the wall 48  
securely couples the white board assembly 18 to the rail 30 such that when a user  
15 exerts pressure in the dry erase surface 34, such as by writing on the surface 34,  
the white board assembly 18 does not move with respect to the wall 48. Thus, the  
white board assembly 18 is securely coupled to the rail 30 and is stable for ease of  
use by the user.

It is understood that in other embodiments (not shown), the first hook  
20 portion 106 (and thus the axis 118) can be substantially parallel to the mounting  
portion 102. In these embodiments, the pressure engagement between the white  
board assembly 18 and the wall 48 is due to factors other than the angle of the  
axis. For example, the bottom edge 62 of the white board assembly 18 could have  
a greater width than the remainder of the board, resulting in engagement between  
25 the bottom edge 62 of the white board assembly 18 and the wall 48. In this

embodiment, the white board assembly 18 would flex away from the mounting portion 102 of the rail 30 as the display board is coupled to the rail 30 (i.e., it would be flexed to allow coupling of the board assembly 18 to the rail 30).

Referring back to Fig. 1, the display system of the illustrated embodiment also includes a plurality of accessories coupled to the second hook portion 110 of the rail 30. In the illustrated embodiment, the accessories include a marker caddy 122 coupled to one portion of the second hook portion 110, and a flip chart 126 coupled to another portion of the second hook portion 110.

With reference to Figs. 6-8, the flip chart 126 is coupled to the second hook portion 110 via a flip chart holder 130. The flip chart holder 130 includes a chart hook portion 134, extended side walls 138, 142, and a protrusion 146. The chart hook portion 134 is of appropriate size and curvature to cooperate with the second hook portion 110 of the rail 30 to secure the flip chart holder 130 to the rail 30. The side walls 138, 142 extend downwardly from the chart hook portion 134 to surround both sides of the top edge of the flip chart 126. The protrusion 146 extends inwardly from the inner surface 150 of one of the side walls 138, 142. With reference to Fig. 8, the protrusion 146 includes a plurality of outwardly extending tabs 154 that are in pressure engagement with the flip chart 126. The tabs 154 secure the flip chart 126 within the flip chart holder 130.

Fig. 9 illustrates the marker caddy 122 in more detail. The marker caddy 122 includes a base 158 and a tool-receiving portion 162. The base 158 and tool-receiving portion 162 are preferably injection molded of plastic and includes a caddy hook portion 166 at the top of the base 158. The caddy hook portion 166 is of appropriate size and curvature to cooperate with the second hook portion 110 of the rail 30 to secure the marker caddy 122 to the rail 30.

The tool-receiving portion 162 includes a plurality of holding areas 174. At least one of the holding areas 174 includes recesses 178, 182 of different sizes capable of receiving tools (e.g., markers) of different sizes. In the illustrated embodiment, one of the holding areas 174 includes a large recess 186 that is sized to hold an eraser (not shown) for use with the dry erase surface 34 of the white board assembly 18.

The display system 14 described above can also be used to perform a method of mounting a portable white board assembly 18 to a mounting surface (such as the wall 48). The rail 30 is coupled to the wall 48 by inserting a fastener 116 through the aperture 114. The board hook portion 94 is moved into position over the first hook portion 106 of the rail 30, and then slid down over the first hook portion 106. Sliding the board hook portion 94 over the first hook portion 106 along the axis 118 causes the pressure engagement between the white board assembly 18 and the wall 48. The white board assembly 18 is secured to the rail 30 via the interaction between the board hook portion 94 and the first hook portion 106 of the rail 30 and via the pressure engagement between the white board assembly 18 and the wall 48. In the illustrated embodiment, coupling the white board assembly 18 to the rail 30 along the axis 118 includes angling the white board assembly 18 with respect to the wall 48, and with respect to the mounting portion 102.

Figs. 10 and 11 illustrate an alternate system for mounting the board using a different rail 200. The rail 200 is designed to cooperate with the top 204 of a wall 208 of a cubicle. Cubicles are often used to divide space in an office setting and are well known in the art. The rail 200 includes a mounting portion 212 that is substantially normal to a first hook portion 216. The mounting portion 212 is



configured to cooperate with the top 204 of the cubicle wall 208 and includes a channel 220 therethrough.

The rail 200 also includes an adjustment bracket 224 that allows the rail 200 to be adjusted to cooperate with cubicle walls 208 of varying thicknesses.

5 The adjustment bracket 224 is designed to cooperate with the backside 226 of the cubicle wall 208, opposite the first hook portion 216. The adjustment bracket 224 includes a top portion 228 that includes an aperture 232 that cooperates with the channel 220 in the mounting portion 212. The adjustment bracket 224 also includes a side portion 236.

10 To couple the rail 200 to the wall 208, the top portion 228 of the adjustment bracket 224 is placed along the top 204 of the wall 208. The mounting portion 212 of the rail 200 is then placed on top of the adjustment bracket 224 such that the channel 220 aligns with the aperture 232. The adjustment bracket 224 is then adjusted until the side portion 236 is in contact with the backside 226  
15 of the wall 208. A fastener, such as a screw 240, is then inserted through the channel 220 and the aperture 232 and tightened to couple the mounting portion 212 and adjustment bracket 224 securely together. A display board can then be coupled to the first hook portion 216. The rail 200 can easily be removed from the wall 208 and be readjusted to fit on another cubicle wall of differing width.

20 Various features of the invention are set forth in the following claims.